

In the Claims

1. (Currently amended) An injector of the type having a motor which advances a plunger drive ram for use with a pre-filled syringe containing an approximate known amount of air, comprising:

a detector for determining a size and type of a syringe mounted to said injector;

a processor coupled to said detector and to said motor which causes the motor to move; and,

a memory storing a predetermined purge stop point associated with the size and type of said pre-filled syringe, representative of the approximate known amount of air in the pre-filled syringe;

the injector configured to automatically advance the plunger drive ram an amount substantially equal to the predetermined purge stop point representative of the approximate known amount of air contained in the pre-filled syringe.

2. (Original) The injector of claim 1 wherein the injector is further configured for use with an extension tubing also containing an approximate known amount of air;

the memory storing a value representative of the approximate amount of air in the extension tubing;

the injector configured to automatically advance the plunger drive ram an additional amount substantially equal to the approximate known amount of air contained in the extension tubing.

3. (Original) The injector of claim 1, wherein the predetermined purge stop point is user adjusted.

4. (Original) The injector of claim 1, wherein the predetermined purge stop point is calibrated.

5. (Currently amended) The injector of claim [[1]] 4 wherein the predetermined purge stop point is calibrated based on historical information.

6. (Original) An injector of the type having a motor which advances a plunger drive ram for use with a user-filled syringe having a syringe plunger and containing an approximate known amount of air, the injector having a mechanical clearance between the plunger drive ram and the syringe plunger, the injector comprising:

a processor which causes the motor to move; and,

a memory storing a predetermined purge stop point representative of the approximate known amount of air added by aeration during filling in the user-filled syringe and the mechanical clearance between the plunger drive ram and the syringe plunger;

the injector configured to automatically advance the plunger drive ram an amount substantially equal to the predetermined purge stop point representative of the approximate known

amount of air added by aeration during filling in the user-filled syringe and the mechanical clearance between the plunger drive ram and the syringe plunger.

7. (Original) The injector of claim 6 wherein the injector is further configured for use with an extension tubing also containing an approximate known amount of air;

the memory storing a value representative of the approximate amount of air in the extension tubing;

the injector configured to automatically advance the plunger drive ram an additional amount substantially equal to the approximate known amount of air contained in the extension tubing.

8. (Original) The injector of claim 6, wherein the predetermined purge stop point is user adjusted.

9. (Original) The injector of claim 6, wherein the predetermined purge stop point is calibrated.

10. (Currently amended) The injector of claim [[6]] 9 wherein the predetermined purge stop point is calibrated based on historical information.

11. (Original) A dual head injector comprising:

a first head configured to receive a first syringe;

a second head configured to receive a second syringe; and,

Y-tubing coupling the first and second syringe;

the dual head injector configured to automatically purge substantially all of the air from the first and second syringes and the Y tubing.

12. (Original) The dual head injector of claim 11, the Y-tubing including a first section coupled to the first head, wherein the first head first purges air from the first syringe and the first section of tubing.

13. (Original) The dual head injector of claim 12, the Y-tubing including a second section coupled to the second head, a connector coupled to the first and second sections, and third section coupled to the connector, wherein the second head next purges air from the second syringe, the second section of tubing, the connector and the third section of tubing.

14. (Original) The dual head injector of claim 11, wherein the first syringe is a pre-filled syringe of contrast media.

15. (Original) The dual head injector of claim 11, wherein the second syringe contains a saline solution.

16. (Original) The dual head injector of claim 11, wherein one of the first and second syringes contains a contrast media.

17. (Original) The dual head injector of claim 11, wherein one of the first and second syringes contains a saline solution.

18. (Currently amended) A method of automatically purging air from a pre-filled syringe mounted to an injector comprising:

automatically determining a syringe size and type for said pre-filled syringe; and

automatically energizing a motor for the period necessary to move a ram to a predetermined purge stop point based on the syringe size and type.

19. (Currently amended) ~~The A method of claim 18, further~~ automatically purging air from a user-filled syringe, comprising:

allowing a user to fill the syringe,

automatically energizing a motor for the period necessary to move a ram to a predetermined purge stop point representative of the approximate known amount of air added by

aeration during filling in the user-filled syringe and the mechanical clearance between the plunger drive ram and the syringe plunger.

20. (Original) The method of claim 18, further comprising performing said energizing step upon a user activating a purge button.

21. (Original) The method of claim 18 wherein the predetermined purge stop point is based on actual values for amounts of air trapped in a particular pre-filled syringe and an extension tubing used therewith.

22. (Currently amended) The method of claim 18, wherein the predetermined purge stop point is calibrated based on historical data.

23. (Original) The method of claim 18, wherein the syringe size and type are entered from a user interface.

24. (Original) The method of claim 18, wherein the syringe size and type are derived from a face plate to which the syringe is coupled.

25. (Currently amended) A method of automatically purging air from an injector comprising:

monitoring an air detector proximate a syringe;

energizing a motor to move a ram to advance a plunger of the syringe while monitoring the air detector proximate the discharge tip of the syringe; and

stopping the ram when a predetermined condition is reached after air is no longer detected.

26. (Original) The method of claim 25, further comprising allowing a user to fill the syringe.

27. (Original) The method of claim 25, initiated upon a user activating a purge button.

28. (Original) The method of claim 25 wherein said ram is stopped after a predetermined amount of fluid has been purged while air is not detected.

29. (Original) The method of claim 25 wherein said air detector is proximate a discharge tip of said syringe.

30. (Original) A method automatically purging air from a dual head injector comprising:

determining first and second syringe sizes and types installed on said injector;
energizing a motor of a first head for the period necessary to move a ram to a predetermined purge stop point based on the first syringe size and type;
energizing a motor of a second head for the period necessary to move a ram to a predetermined purge stop point based on the second syringe size and type.

31. (Original) The method of claim 30, further comprising allowing a user to fill the first syringe.

32. (Original) The method of claim 30, further comprising allowing a user to fill the second syringe.

33. (Original) The method of claim 30, initiated upon a user activating a purge button on the first head.

34. (Original) The method of claim 28, initiated upon a user activating a purge button on the second head.

35. (New) The method of claim 19, further comprising performing said energizing step upon a user activating a purge button.

36. (New) The method of claim 19 wherein the predetermined purge stop point is based on actual values for amounts of air trapped in a particular user-filled syringe and an extension tubing used therewith.

37. (New) The method of claim 19, wherein the predetermined purge stop point is calibrated based on historical data.

38. (New) The method of claim 19, wherein the syringe size and type are entered from a user interface.

39. (New) The method of claim 19, wherein the syringe size and type are derived from a face plate to which the syringe is coupled.